

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently amended) Diagnosis system for household electric appliances such as refrigerators, freezers, and others, of the type presenting multiple loads (10) which are energized by switches (20) commanded by respective electronic controls (30) operatively coupled to a command module (50), which energizes the loads (10) and an interface (80) coupled thereto, characterized in that it comprises:

a voltmeter (60) operatively coupled to the inlet of each load (10), so as to measure a first voltage ( $V_{eff}$ ) in the inlet of the loads (10) with the switches (20) opened, and a one or more second voltage ( $V_{res}$ ,  $V_{lamp}$ ,  $V_{comp}$ ) in the inlet of each load (10) with the respective switch (20) closed;

a control unit (70) operatively associated with the command module (50) and with the voltmeter (60) and which is operated according to a sequence of tests that are selectively activated to receive from the voltmeter (60) the values of the first voltage ( $V_{eff}$ ) and of each second voltage ( $V_{res}$ ,  $V_{lamp}$ ,  $V_{comp}$ ) and to process these values, indicating in the interface (80) the existence of failure in at least one of the elements defined by the command module (50), by the switches (20), and by the respective electronic controls (30) thereof, in case any second voltage ( $V_{res}$ ,  $V_{lamp}$ ,  $V_{comp}$ ) presents a value that is equal to or higher than that of the first voltage ( $V_{eff}$ ).

Claim 2 (Currently amended) The diagnosis system as set forth in claim 1, characterized in that wherein the control unit (70) is operated so as to further process, sequentially, the values of each pair of second voltages ( $V_{res}$   $V_{lamp}$ ,  $V_{lamp}$   $V_{comp}$ ) of two loads (10) with the respective switches (20) simultaneously closed, indicating in the interface (80) the existence of failure in at least one of the elements defined by the command module (50), by the switches (20), and by their respective electronic controls (30) and interrupting the sequence of tests, in case any second voltage ( $V_{res}$ ,  $V_{lamp}$ ,  $V_{comp}$ ) of each load (10) presents a value that is equal to or higher than a limit voltage ( $V_{lim}$ ) which is lower than the first voltage ( $V_{eff}$ ) and in case each pair of second voltages ( $V_{res}$   $V_{lamp}$ ;  $V_{lamp}$   $V_{comp}$ ) of two loads (10) with the switches (20) simultaneously closed presents a value that is equal to or higher than a processing voltage ( $V_{proc1}$ ,  $V_{proc2}$ ) which is lower

than the second voltage of one of said two loads (10) whose activating means in the command module (50) are not being tested.

Claim 3 (Currently amended) The diagnosis system as set forth in claim 2, characterized in that wherein the limit voltage ( $V_{lim}$ ) has a value corresponding to about 87.5% the value of the first voltage ( $V_{eff}$ ).

Claim 4 (Currently amended) The diagnosis system as set forth in claim 2, characterized in that wherein the processing voltage ( $V_{proc1}$ ,  $V_{proc2}$ ) has a value corresponding to about 87.5% the value of the second load ( $V_{res}$ ,  $V_{lamp}$ ,  $V_{comp}$ ) of said load (10) selected from the two loads (10) with the switches (20) simultaneously closed and whose activating means in the command module (50) are not being tested.

Claim 5 (Currently Amended) The diagnosis system as set forth in any of the claims claim 1 or 2, characterized in that wherein the control unit (70) returns the command module (50) to the normal operation in the refrigeration appliance, after it has indicated in the interface (80) the existence of failure in the operation of any of the elements defined by the command module (50), the switches (20), and the electronic controls (30).

Claim 6 (Currently amended) The diagnosis system as set forth in any of the claims claim 1 or 2, characterized in that wherein the control unit (70) indicates in the interface (80) the absence of failure in the loads (10), when the second voltages ( $V_{res}$ ,  $V_{lamp}$ ,  $V_{comp}$ ) measured by the voltmeter (60) are lower than the first voltage ( $V_{eff}$ ) and the latter is higher than a reference voltage ( $V_{ref}$ ) corresponding to a voltage value above which the first voltage ( $V_{eff}$ ) is compulsorily situated in the correct operational condition of the loads (10).

Claim 7 (Currently amended) The diagnosis system as set forth in claim 6, characterized in that wherein the control unit (70) compares the first voltage ( $V_{eff}$ ) with the reference voltage ( $V_{ref}$ ) only after it has compared the second voltages ( $V_{res}$ ,  $V_{lamp}$ ,  $V_{comp}$ ) with each other and verified they are equal or substantially equal.

Claim 8 (Currently amended) The diagnosis system as set forth in claim 6, ~~characterized in that wherein~~ the control unit (70) indicates in the interface (80) the existence of failure in any of the loads (10), when the respective second voltage ( $V_{res}$ ,  $V_{clamp}$ ,  $V_{comp}$ ) is higher than a minimum voltage ( $V_{min}$ ), which is lower than the lowest second voltage ( $V_{res}$ ,  $V_{clamp}$ ,  $V_{comp}$ ) in the inlet of each load (10) with the respective switch (20) closed.

Claim 9 (Currently amended) The diagnosis system as set forth in claim 8, ~~characterized in that wherein~~ the minimum voltage ( $V_{min}$ ) has a value corresponding to about 75% the value of the lowest second voltage ( $V_{res}$ ,  $V_{clamp}$ ,  $V_{comp}$ ).

Claim 10 (Currently amended) The diagnosis system as set forth in claim 8, ~~characterized in that wherein~~ the control unit (70) compares each second voltage ( $V_{res}$ ,  $V_{clamp}$ ,  $V_{comp}$ ) with the minimum voltage ( $V_{min}$ ) only after comparing said second voltages with each other and verified they are not equal.

Claim 11 (Currently amended) The diagnosis system as set forth in claim 1, ~~characterized in that wherein~~ the voltmeter (60) comprises a signal conditioning circuit (61) connected to the inlet of each load (10) upstream the respective switch (20) and supplying voltage signals from said inlet of each load (10) to the control unit (70).

Claim 12 (Currently amended) The diagnosis system as set forth in claim 11, ~~characterized in that wherein~~ the voltage signals of the inlet of the loads (10) are sent to an AD converter (62) connected to the control unit (70).

Claim 13 (Currently amended) The diagnosis system as set forth in claim 1, ~~characterized in that wherein~~ the control unit (70) interrupts the sequence of tests in case any second voltage ( $V_{res}$ ,  $V_{clamp}$ ,  $V_{comp}$ ) presents a value that is equal to or higher than that of the first voltage ( $V_{off}$ ).

Claim 14 (New) The diagnosis system as set forth in claim 2, wherein the control unit returns the command module to the normal operation in the refrigeration appliance, after it has indicated in the interface the existence of failure in the operation of any of the elements defined by the command module, the switches, and the electronic controls.

**Claim 15 (New)** The diagnosis system as set forth in claim 2, wherein the control unit indicates in the interface the absence of failure in the loads, when the second voltages measured by the voltmeter are lower than the first voltage and the latter is higher than a reference voltage corresponding to a voltage value above which the first voltage is compulsorily situated in the correct operational condition of the loads.

**Claim 16 (New)** The diagnosis system as set forth in claim 15, wherein the control unit compares the first voltage with the reference voltage only after it has compared the second voltages with each other and verified they are equal or substantially equal.

**Claim 17 (New)** The diagnosis system as set forth in claim 15, wherein the control unit indicates in the interface the existence of failure in any of the loads, when the respective second voltage is higher than a minimum voltage, which is lower than the lowest second voltage in the inlet of each load with the respective switch closed.

**Claim 18 (New)** The diagnosis system as set forth in claim 15, wherein the minimum voltage has a value corresponding to about 75% the value of the lowest second voltage.

**Claim 19 (New)** The diagnosis system as set forth in claim 15, wherein the control unit compares each second voltage with the minimum voltage only after comparing said second voltages with each other and verified they are not equal.